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Patterns and Trends in World Agricultural Land Use

Francis Urban
Thomas Vollrath

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Abstract

Technological change will be essential in increasing crop production to meet the future world food needs because the world's population is increasing at a much faster rate than is the increase in usable agricultural land. Although only about half of the world's estimated 3 billion hectares of arable land is currently used for crop production, the remainder is generally believed to be only marginally productive. Cropland area has actually decreased in some regions of the world. This study measures agricultural land availability and trends and provides specific land constraints to world food production projections.

Keywords: Agricultural lands, cropland, forests and woodlands, permanent pastures, other land, land use, land productivity.

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Summary

Technological change will be essential in increasing crop production to meet the future world food needs because the world's population is increasing at a much faster rate than is the increase in usable agricultural land. Although only about half of the world's estimated 3 billion hectares of arable land is currently used for crop production, the remainder is generally believed to be only marginally productive at best.

There is an increasing disparity between world population growth and cropland expansion. While the population growth rate has declined from 2.0 percent per year in the 1950's to the current 1.7 percent, the rate of cropland expansion has fallen from 1.0 to less than 0.3 percent. This has brought about a significant global drop in per capita cropland availability.

Land-use data have shown significant changes over the last three decades for which relatively comprehensive information is available. Cropland has expanded steadily, but the rate of expansion has been leveling off. Land in permanent pastures expanded slowly through the mid-1970's and then began to decline. Forests and woodlands declined steadily over the course of the three decades. Finally, deserts and land in urban, industrial, and commercial use declined until about 1975 as desert lands were reclaimed for agriculture. Thereafter, area in this land category began to increase as cropland, pastures, and forests were lost to urban, commercial, and recreational uses faster than desert lands could be reclaimed.

Many countries have little if any area for cropland expansion due to their already dense population. Others with a fairly abundant land area are unable to expand because of poor climates or poor quality of land. Because of terrain, climate, and population density, Latin America, particularly the countries of Argentina, Brazil, Uruguay, and to a lesser extent Chile, has the greatest potential for cropland expansion.

The disparity between the population and cropland growth rates is likely to continue. Between now and the end of this century, world population is expected to grow at an annual rate of 1.6 percent; cropland growth, however, will probably be about 0.2 percent per year or less. Thus, world population will increase 40 percent while cropland will expand only 4 to 5 percent by the year 2000. Land, although critical to agriculture, is not the only factor of production. It is the availability of land, in cooperation with other factors, such as water, climate, and technology, that will determine future food production.

PATTERNS AND TRENDS IN WORLD AGRICULTURAL LAND USE

Francis Urban and Thomas Vollrath*

Introduction

A first step in assessing the production of world agriculture is to analyze trends in land availability and use. For much of the world, little is known about these trends. This study evaluates the growth and changes in uses of the world's agricultural land resource base during the last quarter of the century and provides a basis for estimating future world and regional cropland availability.

The earth's total land surface, excluding lakes, rivers, and land under permanent ice, is estimated at 13 billion hectares, of which 2.5 to 3.4 billion hectares, or 19 to 27 percent, are potentially arable (2, 9, 16).¹ As of 1980, however, less than 1.5 billion hectares, or about half of the estimated arable land, were actually cultivated. The remaining 1.0 to 1.9 billion hectares make a part of permanent pastures and forests (table 1).

These numbers indicate that a substantial portion of the world's total arable land is unexploited. However, the more productive agricultural land is already under cultivation. The remaining potentially arable land, which is largely marginal in terms of soil quality, climate, topography, or distances from population centers, could be cultivated to meet the needs of a growing population and to improve standards of living (1, 2). However, the cost of expanding the global cropland base would be high either financially or environmentally (11).

In some geographical areas there is sufficient unused arable land for expansion. In some areas, most of the available land is already in cultivation, and this base is shrinking as urban areas, industry, and transportation expand. Moreover, in other areas the agricultural land base is shrinking, or expanding less rapidly, due to

land degradation associated with the encroachment of deserts, soil erosion, and salinization of irrigated lands. Thus, most increases in future agricultural production will have to come from improved yields rather than expanded area.

Population expansion is expected to considerably increase the pressure on natural resources, including agricultural land throughout the remainder of the century. World population is projected to grow at an average annual rate of 1.6 percent through the year 2000, resulting in a 40-percent increase (from 4.5 billion people in 1980 to 6.2 billion people in 2000). It is important, therefore, to examine past trends in the availability and use of agricultural land in order to establish a firmer basis for projecting world food production.

Land-Use Data

Detailed information on land use exists for most developed countries but is lacking for many developing countries. The only readily available land-use data for all countries are collected or estimated annually by the Food and Agriculture Organization of the United Nations (FAO). For instance, 1981 land-use data published by FAO show 1961-65 average and annual statistics for 1974, 1977, and 1980 (6). The data are derived from information supplied by national governments. Whenever the reported data are obviously incomplete, which is often the case for developing countries, FAO provides unofficial or estimated numbers on land use.

The FAO data categories are as follow:

- Arable land—land under temporary crops, with double-cropped areas counted only once, temporary meadows for mowing or pasture, land under market and kitchen gardens, including cultivation under glass, and land temporarily fallow or idle.

¹ 1 hectare = 2.471 acres. Italicized numbers in parentheses refer to references at the end of this report.

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- Land in permanent crops—area cultivated with crops that occupy the land for long periods and need not be replanted after each harvest, such as cocoa, coffee, and rubber, land under shrubs, fruit trees, nut trees, and vines, but excluding land under trees grown for wood or timber.
- Permanent pastures—land used for 5 or more years for herbaceous forage crops, either cultivated or growing wild.
- Forests and woodlands—land under natural or planted stands of trees, including land from which forests have been cleared but which will be reforested in the foreseeable future.
- Other land—unused, but potentially productive land, built-on land, barren land, and any other land not specifically listed under other categories (6).
- Agricultural land—an aggregation of arable land, land in permanent crops, and permanent pastures (7).

Table 1—World surface and land use, 1980

	World surface Million hectares	Percentage of land used of—	
		Total area	Land area
		Percent	
Total earth area	51,007	100.0	NA
Less oceans and seas	-36,168	-70.9	NA
Total land area	14,839	29.1	NA
Less Antarctica	-1,320	-2.6	NA
Less Greenland under ice cap	-184	-.4	NA
Less inland waters	-260	-.5	NA
Remaining land area	13,075	25.6	100.0
Total cropland	1,452	NA	11.1
Annual crops	1,358	NA	10.4
Permanent crops	94	NA	.7
Permanent pastures	3,117	NA	23.8
Forests and woodlands	4,094	NA	31.3
Other lands	4,412	NA	33.8

NA = Not applicable.
Sources: (6, 12).

In this study, FAO data on arable land and land in permanent crops are aggregated for analytical purposes and referred to as "cropland" throughout the remainder of this report.

For selected countries, FAO land-use data are given for selected years back to 1938. In some cases these data seem to contain a number of unreconciled series. Hence the authors adjusted some of the historical series whenever more reliable information was available in ERS. Data for the United States and Italy were completely revised, and those for Taiwan were added.²

Even with these adjustments, much of the information prior to 1961-65 still contained some inconsistencies. In particular, major data problems appear to exist for Brazil, Mexico, People's Republic of China, the Soviet Union, and probably a number of developing countries, especially in Central and South America and East Asia. However, the total area involved was relatively small, and these data-deficiency problems were ignored because they did not seriously affect world or regional trends.

Overall, FAO has tried to establish homogeneous definitions to their land categories. Official government figures are occasionally adjusted, however, in order to render them more comparable with other countries. Thus, for instance, the numbers for arable and permanent cropland reported by many African countries were adjusted downward from what was reported because of lengthy fallow periods characteristic of "slash and burn" agricultural practices in that part of the world.

Despite obvious deficiencies, the FAO land data are an essential source of information for analysis. Generally, the data are consistent over time and across countries and can be used for comparative analyses and estimation of longer term trends.

The authors examined in detail data for 135 countries with 100,000 or more hectares of arable and permanent cropland (app. table 3). The primary time period of the analysis was 1961-65 to 1980, although extensions were made back to 1955.

² See app. table 3.

The authors then grouped the data into 14 geographical regions or countries to reduce the data base to manageable proportions (table 2). These data series were used to examine past trends. Extrapolations were then made to the year 2000 to assess future cropland availability. Per capita cropland numbers were calculated using U.S. Bureau of the Census population series and projections (14, 15).

Trends in Agricultural Land Use

Cropland covers a relatively small proportion of the total world land area. Most of that area is about evenly divided, at least on a global scale, among permanent pastures, forests, and the category called "other land," which includes deserts and land in urban, commercial, and recreational uses. These proportions, however, differ greatly from one region to another and are changing over time. Crop area is generally expanding, though at a decreasing rate, but there are large parts of the world where cropland is declining. The area in the "other land" category is also expanding, but lands in pastures and forests are decreasing. The trends indicate that little additional cropland is likely to be added to what is currently cultivated. Also, we may expect additional loss of forest and pasture lands and an expansion of built-up, industrial, and commercial land use in the "other land" category.

Global Land-Use Patterns

Land devoted to crop production in 1980 occupied only about 11 percent of the world's land area, while pastures, forests, and other lands represented 24, 31, and 34 percent, respectively (table 3). The distribution of land among categories, however, varied greatly from one region or country to another.

South Asia and Eastern Europe represent one extreme in the composition of land use. More than 40 percent of the total available land area in those regions is used for crop production. North Africa and East Asia are at the other extreme. In North Africa only 4.4 percent of the total land area (80 percent of which is desert) is used as cropland. Moreover, this region has the smallest proportion of forests and woodlands, less than 2 percent. Similarly, in East Asia only 4.6 percent of the total available land area is used as cropland, while an unusually high proportion (58 percent) is in pastures because of the inclusion of Mongolia which

contains mostly arid or semiarid land suitable only for animal grazing.

A high proportion of permanent pastures to total available land (26 to 34 percent) is found in North America and Oceania, Central and South America, Near East, and Sub-Saharan Africa because of a relative abundance of semiarid lands not suitable for cultivation.

Forests and woodlands cover about one-third of total land area and are concentrated in a few places. Southeast Asia and South America have the highest proportion of forests and woodlands to total land area, with 57 to 64 percent, respectively. The wooded areas in these two regions are largely tropical rain forests. The Soviet Union has the highest proportion of forests in the temperate zone, more than 41 percent. The Near East and China have low ratios of forest and woodland to total land area, 7 and 12 percent, respectively. In Africa, wooded areas are primarily confined to the tropical rain forests in the Congo River basin. There is, however, little forested area in North Africa. The continent as a whole is characterized by a fairly even distribution of forests, savannah, and desert.

Trends in Composition of Land Use

An examination of world land-use data for 1955-80 shows that cropland expanded primarily at the expense of forests and woodland and to a lesser extent at the expense of permanent pastures (table 4).³ The "other land" category declined gradually but steadily until 1970, remained essentially constant until 1975, and then began to rise rapidly. Underlying these trends were increased investment in converting deserts and wastelands into agricultural lands during the 1950's and 1960's, followed by increased conversion of forests and woodlands into urban and industrial use (fig. 1 and table 3).

World cropland area expanded by 118 million hectares from 1965-75 average to 1980 (table 4). However, during this period both permanent pasture as well as forests and woodlands declined, the former by 39

³ Only cropland (arable land and land under permanent crops) statistics have been analyzed for 1955-80. Because of poor quality of data for earlier periods, data for land in permanent pastures, forests and woodland, and other land have been examined for 1961-65 to 1980. However, the FAO land-use data tape shows updated, and presumably reconciled, series for 1966-80 only (6, 7).

Table 2—Per capita cropland by region and country, 1980

Region/country	Per capita cropland	Region/country	Per capita cropland
	<i>Hectares</i>		<i>Hectares</i>
North America and Oceania	1.040	South America—Continued	
Canada	1.853	Uruguay	0.653
United States	.837	Venezuela	.217
Greenland	.100		
Australia	3.037	Western Europe	.248
New Zealand	.139	Austria	.217
		Belgium-Luxembourg	.089
Central America	.333	Denmark	.517
Mexico	.344	Finland	.502
Belize	.333	France	.347
Costa Rica	.219	Germany, Federal Republic of	.122
El Salvador	.151	Greece	.411
Guatemala	.158	Iceland	.035
Honduras	.466	Ireland	.286
Nicaragua	.625	Italy	.219
Panama	.299	Malta	.040
		Netherlands	.061
Caribbean Islands	.203	Norway	.199
Antigua	.107	Portugal	.357
Bahamas	.065	Spain	.548
Barbados	.115	Sweden	.358
Bermuda	0	Switzerland	.062
Cayman Islands	.117	United Kingdom	.125
Cuba	.322		
Dominica	.215	Eastern Europe	.398
Dominican Republic	.216	Albania	.279
Grenada	.131	Bulgaria	.472
Guadeloupe	.158	Czechoslovakia	.339
Haiti	.153	German Democratic Republic	.301
Jamaica	.118	Hungary	.497
Martinique	.084	Poland	.419
Montserrat	.100	Romania	.472
Netherlands Antilles	.033	Yugoslavia	.353
Puerto Rico	.040		
Saint Lucia	.138	Union of Soviet Socialist Republics	.874
St. Vincent	.148		
Trinidad and Tobago	.137	North Africa	.399
Turks and Caicos Islands	.142	Algeria	.399
U.S. Virgin Islands	.070	Egypt	.068
		Libya	.686
South America	.521	Morocco	.368
Argentina	1.260	Tunisia	.726
Bolivia	.630		
Brazil	.508	Sub-Saharan Africa	.446
Chile	.502	Angola	.522
Colombia	.228	Benin	.517
Ecuador	.328	Botswana	1.735
French Guiana	.062	Burundi	.030
Guyana	.450	Cameroon	.812
Paraguay	.601	Cape Verde	.119
Peru	.193	Central African Republic	.831
Surinam	.022	Chad	.680

Continued

Table 2—Per capita cropland by region and country, 1980—Continued

Region/country	Per capita cropland	Region/country	Per capita cropland
	<i>Hectares</i>		<i>Hectares</i>
Sub-Saharan Africa—Continued		Middle East—Continued	
Comoro Islands	0.244	Lebanon	0.115
Congo	.432	Qatar	.009
Djibouti	.003	Saudi Arabia	.112
Equatorial Guinea	.939	Syria	.646
Ethiopia	.466	Oman	.046
Gabon	.685	Turkey	.624
Gambia	.449	United Arab Emirates	.014
Ghana	.228	Yemen Arab Republic	.534
Guinea	.290	Yemen Democratic Republic	.110
Guinea Bissau	.430		
Ivory Coast	.483	South Asia	.227
Kenya	.138	Bangladesh	.103
Lesotho	.219	Bhutan	.071
Liberia	.201	India	.244
Madagascar	.351	Maldives	.019
Malawi	.350	Nepal	.156
Mali	.309	Pakistan	.247
Mauritania	.130	Sri Lanka	.144
Mauritius	.112		
Mozambique	.254	Southeast Asia and Pacific Islands	.200
Namibia	.642	Burma	.291
Niger	.609	Brunei	.040
Nigeria	.394	Indonesia	.132
Reunion	.102	Kampuchea	.534
Rwanda	.191	Laos	.253
Sao Tome-Principe	.434	Malaysia	.308
Senegal	.921	Philippines	.202
Seychelles	.077	Singapore	.003
Sierra Leone	.523	Thailand	.376
Somalia	.300	Vietnam	.113
South Africa	.474	American Samoa	.250
Sudan	.662	Fiji	.375
Swaziland	.367	French Polynesia	.510
Tanzania	.277	Kiribati	.621
Togo	.542	Guam	.100
Uganda	.444	New Caledonia	.073
Upper Volta	.376	Pacific Islands, U.S. Trust Territory of the	.440
Western Sahara	.020	Papua New Guinea	.116
Zaire	.218	Samoa	.782
Zambia	.876	Solomon Islands	.226
Zimbabwe	.341	Tonga	.546
Middle East	.521	East Asia	.056
Afghanistan	.519	Hong Kong	.001
Bahrain	.005	Japan	.042
Cyprus	.695	Korea, Democratic Peoples Republic of	.125
Iran	.412	Korea, Republic of	.057
Iraq	.415	Mongolia	.712
Israel	.107	Taiwan	.052
Jordan	.417		
Kuwait	0	China	.102

Source: (6, 15)

Table 3—World land use, as a percentage of total land, by region

Region and land category	1961-65	1966	1970	1975	1980
	<i>Percent</i>				
World:					
Cropland ¹	10.2	10.6	10.8	10.9	11.1
Permanent pastures	24.1	23.9	23.9	24.0	23.8
Forests and woodland	31.7	32.4	32.2	31.9	31.3
Other land	34.0	33.2	33.1	33.1	33.8
Total land area ²	100.0	100.0	100.0	100.0	100.0
North America & Oceania:					
Cropland	9.7	9.9	10.4	10.4	10.7
Permanent pastures	28.2	28.2	27.9	28.0	27.7
Forests and woodland	29.0	29.0	29.0	29.1	27.6
Other land	33.3	32.9	32.6	32.4	34.0
Total land area	100.0	100.0	100.0	100.0	100.0
Central America:					
Cropland	11.3	12.7	13.2	13.5	13.5
Permanent pastures	30.7	33.7	33.7	34.0	34.1
Forests and woodland	36.7	31.9	30.3	28.9	27.3
Other land	21.3	21.7	22.8	23.6	25.1
Total land area	100.0	100.0	100.0	100.0	100.0
Caribbean Islands:					
Cropland	17.4	17.4	21.7	26.1	26.1
Permanent pastures	21.7	21.7	21.7	21.7	21.7
Forests and woodland	17.4	17.4	17.4	17.4	17.4
Other land	43.5	43.5	39.2	34.8	34.8
Total land area	100.0	100.0	100.0	100.0	100.0
South America:					
Cropland	4.7	6.0	6.3	6.8	7.1
Permanent pastures	23.2	24.0	24.7	25.3	25.7
Forests and woodland	54.1	56.8	56.0	54.5	53.8
Other land	18.0	13.2	13.0	13.3	13.4
Total land area	100.0	100.0	100.0	100.0	100.0
Western Europe:					
Cropland	25.4	24.3	23.8	23.0	22.8
Permanent pastures	18.1	18.1	17.5	17.3	17.0
Forests and woodland	27.7	28.5	29.3	30.1	30.4
Other land	28.8	29.1	29.3	29.6	29.8
Total land area	100.0	100.0	100.0	100.0	100.0
Eastern Europe:					
Cropland	44.0	44.0	43.2	43.2	43.2
Permanent pastures	16.8	17.6	17.6	17.6	17.6
Forests and woodland	29.6	29.6	30.4	30.4	31.2
Other land	9.6	8.8	8.8	8.8	8.8
Total land area	100.0	100.0	100.0	100.0	100.0
USSR:					
Cropland	10.3	10.3	10.5	10.4	10.4
Permanent pastures	16.7	16.7	16.8	16.7	16.7
Forests and woodland	41.3	41.3	41.3	41.3	41.3
Other land	31.7	31.7	31.4	31.6	31.6
Total land area	100.0	100.0	100.0	100.0	100.0

See footnotes at end of table.

Continued

Table 3—World land use, as a percentage of total land, by region—Continued

Region and land category	1961-65	1966	1970	1975	1980
	<i>Percent</i>				
North Africa:					
Cropland	4.0	4.0	4.2	4.3	4.4
Permanent pastures	10.6	11.0	11.0	11.0	10.6
Forests and woodland	1.6	1.6	1.6	1.9	1.9
Other land	83.8	83.4	83.2	82.8	83.1
Total land area	100.0	100.0	100.0	100.0	100.0
Sub-Saharan Africa:					
Cropland	5.3	5.9	6.1	6.3	6.5
Permanent pastures	31.6	30.2	30.2	30.2	32.0
Forests and woodland	27.4	30.6	30.0	29.3	28.7
Other land	35.7	33.3	33.7	34.2	34.6
Total land area	100.0	100.0	100.0	100.0	100.0
Near East:					
Cropland	9.4	9.6	9.7	9.9	10.1
Permanent pastures	27.6	27.6	27.6	27.6	27.6
Forests and woodland	8.0	7.6	7.6	7.4	7.4
Other land	55.0	55.2	55.1	55.1	54.9
Total land area	100.0	100.0	100.0	100.0	100.0
South Asia:					
Cropland	41.8	42.5	43.1	43.9	44.1
Permanent pastures	14.0	15.3	14.9	14.9	14.6
Forests and woodland	15.1	16.3	17.6	17.4	17.6
Other land	29.1	25.9	24.4	23.8	23.7
Total land area	100.0	100.0	100.0	100.0	100.0
Southeast Asia:					
Cropland	12.2	13.3	13.7	14.8	15.0
Permanent pastures	4.4	4.2	4.2	4.2	4.2
Forests and woodland	62.6	61.3	60.3	58.4	57.4
Other land	20.8	21.2	21.8	22.6	23.4
Total land area	100.0	100.0	100.0	100.0	100.0
East Asia:					
Cropland	5.1	5.1	5.1	4.6	4.6
Permanent pastures	64.8	64.8	64.8	65.3	57.9
Forests and woodland	25.9	25.9	25.9	25.9	25.9
Other land	4.2	4.2	4.2	4.2	11.6
Total land area	100.0	100.0	100.0	100.0	100.0
China:					
Cropland	11.2	11.2	11.0	10.9	10.6
Permanent pastures	23.7	23.7	23.7	23.7	23.7
Forests and woodland	11.2	11.4	11.7	12.1	12.4
Other land	53.9	53.7	53.6	53.3	53.3
Total land area	100.0	100.0	100.0	100.0	100.0

¹Defined as the sum of the "arable land" and "land in permanent crops" categories given in the *FAO Production Yearbook*.

²May not add to 100 percent because of rounding.

Source: (6, 7)

Table 4—World land use by region

Region and land category	1961-65	1966	1970	1975	1980
<i>Million hectares</i>					
World:					
Cropland ¹	1,334	1,381	1,414	1,433	1,452
Permanent pastures	3,156	3,122	3,126	3,138	3,117
Forests and woodland	4,139	4,236	4,211	4,172	4,093
Other land	4,446	4,336	4,324	4,332	4,413
Total land area	13,075	13,075	13,075	13,075	13,075
North America & Oceania:					
Cropland	254	259	274	274	280
Permanent pastures	741	739	732	736	727
Forests and woodland	761	761	761	762	724
Other land	867	864	856	851	892
Total land area	2,623	2,623	2,623	2,623	2,623
Central America:					
Cropland	30	34	35	36	36
Permanent pastures	82	90	90	91	91
Forests and woodland	98	85	81	77	73
Other land	57	58	61	63	67
Total land area	267	267	267	267	267
Caribbean Islands:					
Cropland	4	4	5	6	6
Permanent pastures	5	5	5	5	5
Forests and woodland	4	4	4	4	4
Other land	10	10	9	8	8
Total land area	23	23	23	23	23
South America:					
Cropland	82	105	111	120	125
Permanent pastures	407	421	433	444	450
Forests and woodland	948	995	981	963	943
Other land	316	232	228	226	235
Total land area	1,753	1,753	1,753	1,753	1,753
Western Europe:					
Cropland	97	93	91	88	87
Permanent pastures	69	69	67	66	65
Forests and woodland	106	109	112	115	116
Other land	110	111	112	113	114
Total land area	382	382	382	382	382
Eastern Europe:					
Cropland	55	55	54	54	54
Permanent pastures	21	22	22	22	22
Forests and woodland	37	37	38	38	39
Other land	12	11	11	11	11
Total land area	125	125	125	125	125
USSR:					
Cropland	229	229	233	232	232
Permanent pastures	372	373	374	372	373
Forests and woodland	920	920	920	920	920
Other land	706	705	700	703	702
Total land area	2,227	2,227	2,227	2,227	2,227

See footnote at end of table.

Continued

Table 4—World land use by region—Continued

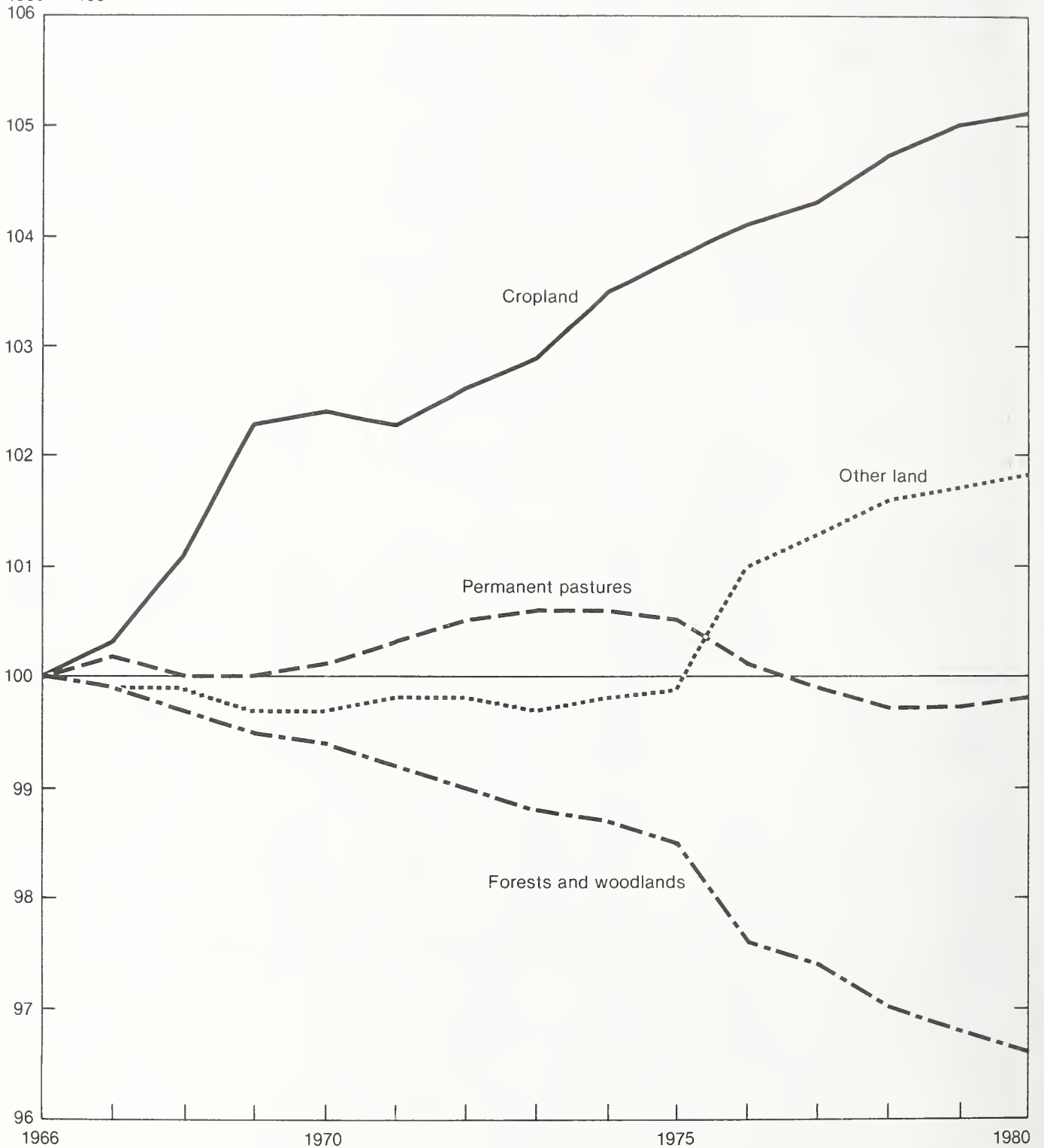
Region and land category	1961-65	1966	1970	1975	1980
	<i>Million hectares</i>				
North Africa:					
Cropland	23	23	24	25	25
Permanent pastures	61	63	63	63	61
Forests and woodland	9	9	9	11	11
Other land	481	479	478	475	477
Total land area	574	574	574	574	574
Sub-Saharan Africa:					
Cropland	126	140	146	151	156
Permanent pastures	757	723	722	722	720
Forests and woodland	655	733	719	701	685
Other land	854	796	805	818	831
Total land area	2,392	2,392	2,392	2,392	2,392
Near East:					
Cropland	58	59	60	61	62
Permanent pastures	170	170	170	170	170
Forests and woodland	49	47	47	46	46
Other land	339	340	339	339	338
Total land area	616	616	616	616	616
South Asia:					
Cropland	200	203	206	210	211
Permanent pastures	67	73	71	71	70
Forests and woodland	72	78	84	83	84
Other land	139	124	117	114	113
Total land area	478	478	478	478	478
Southeast Asia:					
Cropland	59	64	66	70	72
Permanent pastures	21	20	20	20	20
Forests and woodland	301	295	290	281	275
Other land	100	102	105	109	114
Total land area	481	481	481	481	481
East Asia:					
Cropland	11	11	11	10	10
Permanent pastures	140	140	140	141	125
Forests and woodland	56	56	56	56	56
Other land	9	9	9	9	25
Total land area	216	216	216	216	216
China:					
Cropland	104	104	102	101	99
Permanent pastures	220	220	220	220	220
Forests and woodland	104	106	109	113	116
Other land	502	500	499	496	495
Total land area	930	930	930	930	930

¹Defined as the sum of the "Arable land" and "Land in permanent crops" categories given in the *FAO Production Yearbook*.

Source: (6, 7)

Figure 1—World Land Use Changes, 1966-80

1966 = 100



Source: See table 3

million hectares and the latter by 46 million hectares. "Other land" declined by 122 million hectares between 1961-65 and 1970 and then increased by 89 million hectares between 1970 and 1980.

The greatest percentage change in land use occurred for cropland, which increased 8.9 percent between 1961-65 and 1980. By contrast there was little change in the pasture and forest categories, each decreasing by a little more than 1.0 percent. The "other land" category declined 2.7 percent between 1960 and 1970 and then increased 2 percent between 1970 and 1980, resulting in a net decline for the entire period of 0.7 percent. Thus, although steadily declining in importance, cropland expansion was still an important factor in the increase of food production during the period. The decline in the areas of permanent pastures and forests does not seem significant in relative terms, but still represents a decline of 85 million hectares, and the increase in "other land" by 89 million hectares between 1970 and 1980 is significant because it represents a permanent loss of potential cropland.

Among the various land categories, use trends differ considerably from one country or region to another and often vary substantially from global trends. In Western Europe and East Asia, for example, both cropland and pastures are declining while "other land," having first declined, is now increasing. In Mexico, "other land" increased rapidly between 1961-65 and 1980. South Africa displays a similar pattern (table 5).

Forest and woodlands have increased in Western and Eastern Europe, China, and North Africa, apparently due to land-conservation policies. A significant growth in reforested areas in Europe is also attributable to expanded use of land for recreational purposes (10). In all other major geographical regions of the world, forested areas are either declining or remaining constant.

Trends in Cropland Use

Cropland area is still expanding in countries and regions that account for approximately two-thirds of the world's cropland (mostly in North America and Oceania). The rate of expansion, however, is leveling off (fig. 2). In the United States, cropland declined during the 1950's, 1960's, and early 1970's as agricultural yields increased and production surpluses

appeared, and rose in the late 1970's in response to improved world demand.⁴

In both Western and Eastern Europe, where cropland has been intensively cultivated for centuries, cropland in use diminished 7 percent between 1961-65 and 1980, declining from 152 to 141 million hectares. Within the same timespan, cropland in Japan decreased by a substantial 18 percent, from 6.0 to 4.9 million hectares. China also experienced a sharp decline—cropland under cultivation diminished from 104 to 99 million hectares, a loss of 5 percent in nearly two decades. While the FAO data in this case represent an obvious rough estimate, as shown by a perfectly linear 20-year decline, the size of the decline is probably correct.

Other regions and countries experiencing cropland losses are Central America, Egypt, Mexico, the Republic of Korea, South Africa, and the Soviet Union, as well as, most recently, countries in the Middle East. Countries with declining cropland area contain nearly a fifth of the world's cropland.

Cropland use for the world as a whole has expanded along a typical growth curve with the rate of increase gradually declining from 1.0 percent in the late 1950's to below 0.3 percent in the 1970's. If this trend continues, the rate of agricultural land expansion will drop to 0.2 percent in the 1980's and to 0.15 percent in the 1990's. At this rate only 50 to 60 million hectares, or about 4 percent, is likely to be added to the world's 1980 cultivated-cropland base by 2000. This is substantially lower than the nearly 20 percent projected by FAO (5) or even the 10-percent increase projected by Brown (1). This conclusion, based on extrapolation of cropland-use trends of the last quarter century, supports Dregne's contention (4) and the *Global 2000 Report* (3) that despite the apparent abundance of unexploited arable land in the world, the actual increase in cropland will be relatively small.

Future cropland expansion will probably occur principally in North America, Australia, New Zealand,

⁴ See app. table 3 for individual country statistics. In the United States the sudden increase in cropland use in 1968 and 1969 was probably due to the change in the definition of cropland, not identified by FAO, which began to include "cropland pasture" in the total cropland area (8).

Table 5—Land use in selected countries, 1961-65 to 1980

Country and land category	1961-65	1966	1970	1975	1980
<i>Million hectares</i>					
United States:					
Cropland ¹	180	176	190	188	191
Permanent pastures	261	258	244	242	237
Forests and woodland	294	294	292	290	284
Other land	177	184	186	192	200
Total land area	912	912	912	912	912
Canada:					
Cropland	41	42	42	43	44
Permanent pastures	21	21	22	24	24
Forests and woodland	322	322	324	326	326
Other land	538	537	534	529	528
Total land area	922	922	922	922	922
Australia:					
Cropland	34	40	42	42	44
Permanent pastures	446	447	453	457	452
Forests and woodland	138	138	138	138	138
Other land	144	137	129	125	128
Total land area	762	762	762	762	762
Mexico:					
Cropland	24	23	23	23	23
Permanent pastures	74	74	74	74	74
Forests and woodland	81	56	54	51	49
Other land	13	38	41	44	46
Total land area	192	192	192	192	192
Brazil:					
Cropland	30	52	54	59	62
Permanent pastures	132	132	144	154	159
Forests and woodland	527	599	594	587	575
Other land	127	63	54	46	50
Total land area	846	846	846	846	846
Argentina:					
Cropland	28	30	33	35	36
Permanent pastures	147	146	145	144	143
Forests and woodland	61	61	61	60	60
Other land	38	37	35	35	35
Total land area	274	274	274	274	274
Nigeria:					
Cropland	22	29	30	30	28
Permanent pastures	19	19	20	21	21
Forests and woodland	31	19	18	16	16
Other land	19	23	23	24	26
Total land area	91	91	91	91	91

See footnote at end of table.

Continued

Table 5—Land use in selected countries, 1961-65 to 1980—Continued

Country and land category	1961-65	1966	1970	1975	1980
<i>Million hectares</i>					
South Africa:					
Cropland	13	13	13	13	13
Permanent pastures	87	84	83	82	81
Forests and woodland	4	4	4	4	4
Other land	18	21	22	23	24
Total land area	122	122	122	122	122
India:					
Cropland	162	163	165	168	169
Permanent pastures	14	15	13	13	12
Forests and woodland	58	60	66	66	67
Other land	63	59	53	51	50
Total land area	297	297	297	297	297
Japan:					
Cropland	6	6	6	5	5
Permanent pastures	—	—	—	—	—
Forests and woodland	25	25	25	25	25
Other land	6	6	6	7	7
Total land area	37	37	37	37	37

— = Less than 0.5

¹Defined as the sum of the "Arable land" and "Land in permanent crops" categories given in the *FAO Production Yearbook*.

Source: (6, 7)

South America, Sub-Saharan Africa, and Southeast Asia. However, cropland under cultivation appears to have reached a plateau in Central America, the Caribbean, North Africa, and the Soviet Union, and is therefore likely to remain fairly stable or to decline. Future cropland use is likely to continue a downward trend in Western and Eastern Europe, China, and East Asia (principally, Japan, Taiwan, and North and South Korea).

Per Capita Cropland Availability and Trends

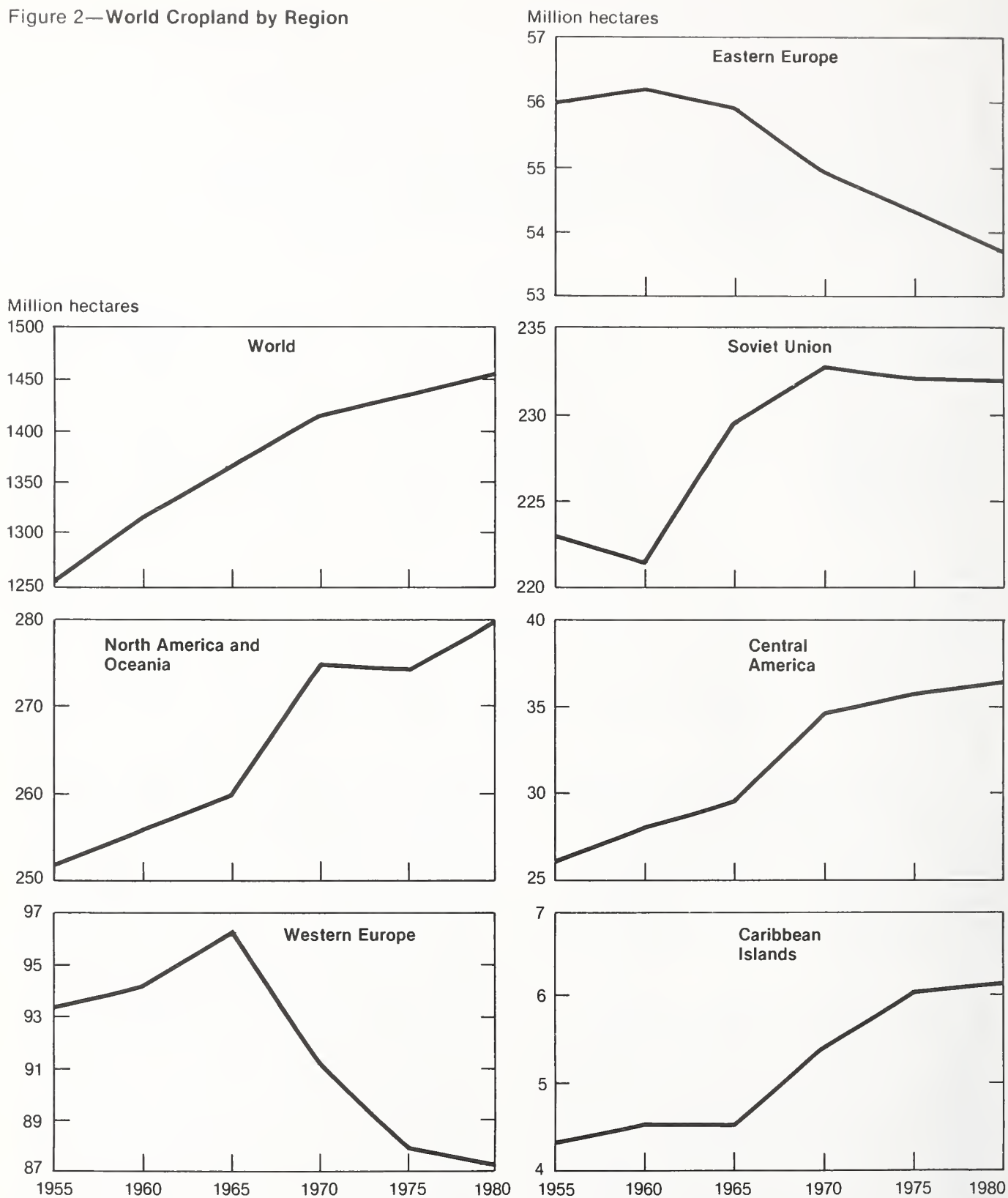
As agricultural land expansion continues to decline in the foreseeable future, with an annual growth rate dropping to less than 0.2 percent in the next two decades, world population will probably continue to increase at an annual rate of 1.6 percent. The relative availability and disparity in cropland endowment among countries and regions is, perhaps, most effectively evaluated through analysis of per capita cropland use.

At one end of the spectrum, there are the extreme cases with very little or no cropland, such as city

states (Hong Kong, Macao, and Singapore), desert countries (Bahrain, Djibouti, Kuwait, Qatar, United Arab Emirates, and Western Sahara), and islands (Bahamas, Maldives, and Seychelles) (table 2). For example, Bermuda, Hong Kong, and Kuwait have almost no cropland, and Bahrain and Djibouti have 200 and 330 persons per hectare of cropland, respectively. There are other countries with high densities of inhabitants per hectare of cropland. For example, there are 45 people per hectare of cropland in Surinam; 33 in Burundi; 30 in the Netherlands Antilles; 25 in Brunei, Malta, and Puerto Rico; 24 in Japan; about 20 in Oman, South Korea, and Taiwan; and 15 in Egypt and the Netherlands. Other countries characterized by a high population per unit of cropland ratio, with a density of 8 to 12 people per hectare, are Bangladesh, Belgium, Cape Verde, China, Federal Republic of Germany, Greenland, Israel, Jamaica, Lebanon, Luxembourg, Mauritius, Papua New Guinea, Reunion, Saudi Arabia, South Yemen, United Kingdom, and Vietnam.

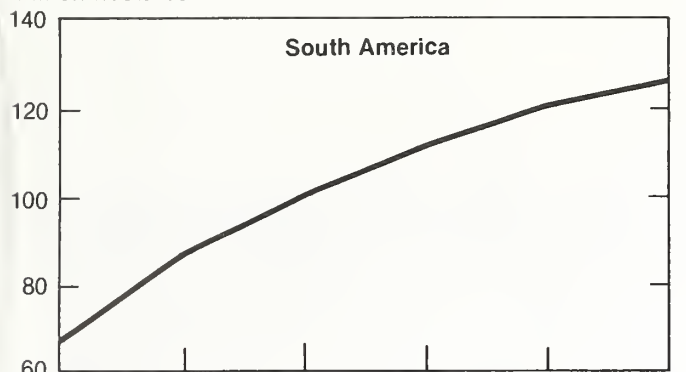
At the other end of the spectrum are Australia with more than 3 hectares of cropland per inhabitant, and

Figure 2—World Cropland by Region

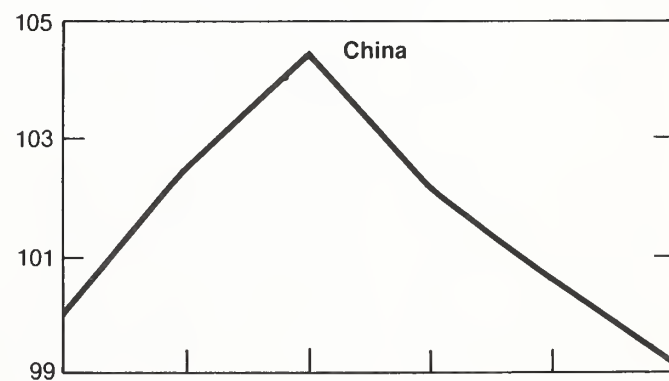
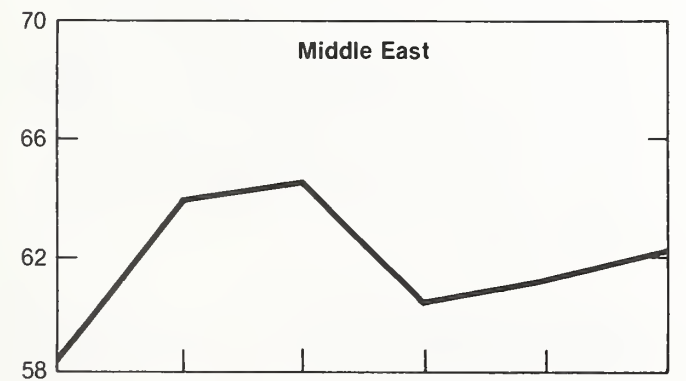
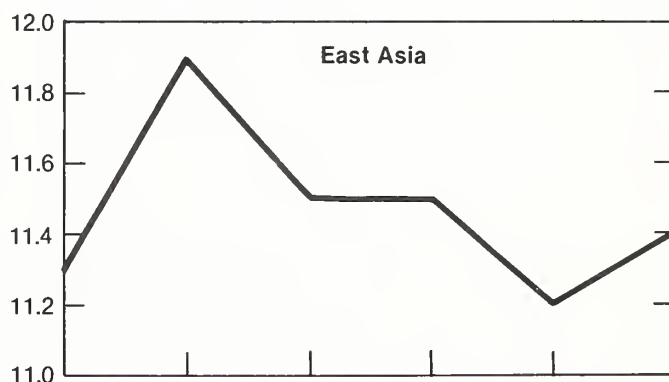
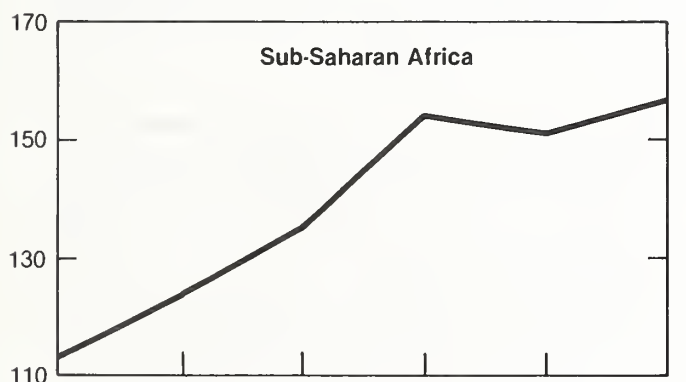
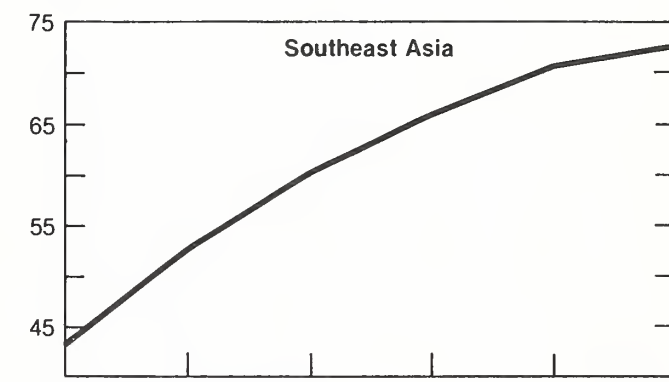
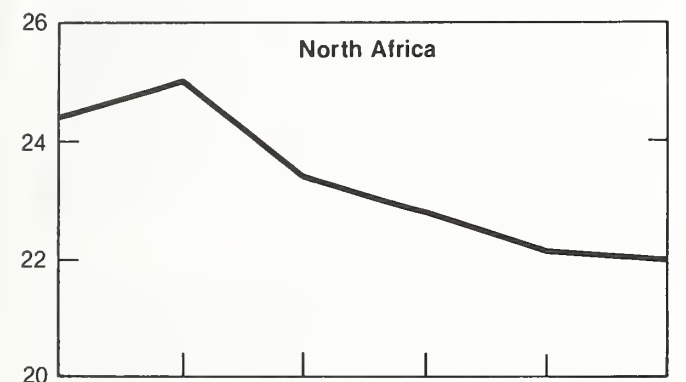
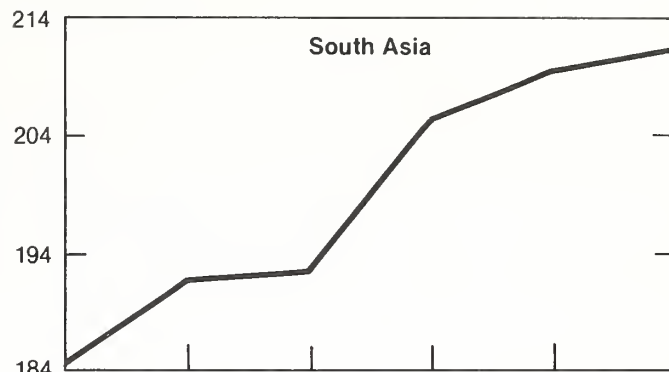


Source: App. table 1.

Million hectares



Million hectares



Argentina, Botswana, and Canada, with more than 1 hectare per inhabitant. Other countries with relatively plentiful cropland include Cameroon, Central African Republic, Equatorial Guinea, Senegal, Soviet Union, the United States, and Zambia—all with nearly 1 hectare of cropland for each inhabitant.

The relative abundance of cropland per inhabitant is not the sole indicator of agricultural production capacity. The Soviet Union, a chronically food-deficient country and large net importer, and the United States, a large net exporter of agricultural goods, are equally well endowed in cropland. There are factors, other than cropland availability, which affect agricultural production and productivity, such as climate, the level of technology, and management practices. A large part of the agricultural land base in the Soviet Union is in the northern zone where highly variable temperatures and precipitation seriously constrain agriculture. Angola, Botswana, Chad, Gabon, Libya, Mongolia, Niger, Sudan, and Tunisia apparently have plenty of land. However, many of these countries are situated in semiarid or arid zones where the productivity of land in terms of crop yield per hectare or livestock-carrying capacity is low.

Africa has a relatively high arable-land-to-population ratio, suggesting that future increases in agricultural production may occur on this continent. Severe constraints, however, are likely to limit increases in actual production. Much of the cropland in Africa is of low productivity. North Africa, the Sahel (in the west), the Horn (in the east), and Southern Africa, are in arid geographical zones where cropland is being lost to encroaching deserts (4). Similarly, cropland in Central Africa is subject to constraints unique to the humid tropics that inhibit increases in production, such as low solar radiation, torrential rains, shallow and leached or acid soils, excessive pest and weed infestation of crops, and tse-tse flies which limit livestock production (11). North America, Oceania, and South America, with fewer constraints on the growth in agricultural production, may very well offer better opportunities for production increases than countries in Africa.

Between 1955 and 1980, per capita cropland in use decreased throughout the world by more than 25 percent, from 0.434 to 0.323 hectares per person, reflecting a higher population growth rate relative to the rate of cropland expansion (tables 6 and 7). A

dramatic increase, close to 50 percent, occurred in Central America (including Mexico), North Africa, and China. Significant decreases also occurred in South Asia (35 percent) and the Middle East (31 percent). In Iran, however, the decrease was 48 percent and in Egypt, 39 percent. These regions and countries are facing serious food problems in terms of the ability to feed their populations from domestic production and the ability to pay for imports. Although Japan, the Republic of Korea, and Taiwan experienced a serious drop in per capita cropland, ranging from 31 to 42 percent, the degree of industrialization and rapidly expanding exports allow them to increase substantially their standard of living, including food consumption.

Cropland per capita declined steadily over the period analyzed in all but 2 of the 14 regions, namely South America and Southeast Asia, where cropland per capita increased until about 1965 before declining. Some countries, including Australia, Brazil, Nigeria, Saudi Arabia, and South Africa, show a similar pattern.

Population density per unit of cropland varies considerably from one region to another, but within a region it is fairly stable over time. The world average is 3 people per hectare, varying from 0.3 in Australia to more than 100 in Qatar. The average number of people per hectare is likely to increase to four by the year 2000. In all probability, Australia and Japan will still be at opposite extremes of the spectrum by the beginning of the next century with 2.5 hectares of cropland per capita in Australia and 30 people per hectare in Japan.⁵ The Republic of Korea and Egypt, where the population density per hectare of cultivated land is likely to be 24 to 30 people by 2000, will face conditions similar to those of Japan. The United States and the Soviet Union are likely to have a population density of 1.3 to 1.4 inhabitants per hectare of cropland.

Factors Causing Changes in Agricultural Land-Use Trends

Factors responsible for either the declining rate of cropland growth globally and in most parts of the

⁵ This, of course, excludes densely settled city states such as Bahrain, Djibouti, Singapore, and Hong Kong where there are from 200 to 1,000 people per hectare of cropland.

Table 6—Per capita cropland by region

Regions	1955	1960	1965	1970	1975	1980
	<i>Hectares</i>					
World	0.434	0.432	0.411	0.379	0.349	0.323
North America ¹	1.305	1.212	1.161	1.136	1.088	1.040
Central America	.638	.575	.520	.438	.381	.333
Caribbean Islands	.231	.216	.189	.212	.226	.203
South America	.534	.579	.616	.584	.555	.521
Western Europe	.316	.303	.283	.263	.255	.248
Eastern Europe	.500	.481	.459	.436	.418	.398
North Africa	.498	.455	.379	.345	.322	.274
Sub-Saharan Africa	.578	.535	.553	.515	.460	.446
Middle East	.759	.727	.684	.666	.535	.521
South Asia	.342	.321	.291	.263	.252	.222
Southeast Asia	.253	.260	.273	.260	.216	.200
Eastern Asia	.085	.082	.075	.067	.062	.056

¹Includes Oceania.

Source: (6, 14, 15).

Table 7—Per capita cropland, selected countries

Country	1955	1960	1965	1970	1975	1980
	<i>Hectares</i>					
United States	1.131	1.021	0.952	0.930	0.884	0.857
Canada	2.500	2.256	2.125	1.999	1.900	1.853
Australia	2.533	2.856	3.234	3.302	3.079	3.037
Mexico	.690	.633	.546	.463	.393	.344
Brazil	.387	.556	.619	.562	.544	.508
Argentina	1.395	1.295	1.321	1.383	1.325	1.260
Egypt	.111	.100	.092	.086	.076	.068
Nigeria	.595	.624	.594	.534	.455	.394
South Africa	.600	.605	.655	.655	.645	.474
Iran	.792	.692	.618	.541	.482	.412
Saudi Arabia	.095	.128	.160	.143	.157	.112
India	.382	.361	.328	.298	.272	.244
Japan	.061	.065	.050	.053	.045	.042
South Korea	.089	.083	.078	.070	.061	.057
USSR	1.138	1.034	.993	.958	.914	.882
China, People's Republic of	.164	.151	.142	.121	.106	.097

Source: (6, 14, 15)

world, or for the absolute contraction of cultivated area in some countries include the cost of land development, loss of cropland to other uses or to deserts, resource conservation, and government production policies.

Presumably, as agricultural land expands to more marginal land, the cost of land development increases so that it eventually becomes cheaper to cultivate existing cropland more intensively than to develop new croplands. Unfortunately, reliable and comparable statistics on cost of land development over time or across countries and regions are lacking. Hence, the extent to which increasing costs of land development is responsible for the declining rate of cropland growth is not certain.

Generally, changes in the composition of agricultural land use have proceeded along a two-step evolutionary pattern. First, shifts occur from permanent pastures or forested areas to cropland. Then, some cropland goes out of agricultural production entirely because of urbanization, industrialization, transportation, or conversion to wasteland (8).

The loss of agricultural land to urbanization and industrial or commercial uses affects most countries, but the change is often hardly perceptible. It is of major concern, however, to the countries of Egypt, Western Europe, Japan, Puerto Rico, and the Republic of Korea. In Western Europe, the loss approaches 0.5 percent annually. In Egypt the annual loss is even higher, approaching 1 percent (10). This process is also just beginning to be viewed as a problem in Canada, Mexico, Taiwan, and the United States.

The loss of agricultural land to encroaching deserts has largely been arrested and even reversed in most areas in the world. However, it still affects large land areas in Africa, particularly in the Sahel and the Horn regions, and some cultivated areas in the Andean slopes in South America (4).

Resource conservation practices affected cropland area principally in Europe, and to some extent in Japan and China. Cropland under cultivation declined in Europe because of reforestation. In Italy, for instance, 2.3 million hectares and in France 1.5 million hectares were withdrawn from agriculture between 1950 and 1980 because of reforestation. Some land

was also withdrawn from agriculture for recreational uses (10). The return of agricultural land to its natural state should have positive long-term effects through improved ecological conditions.

Agricultural policies have been aimed either at expanding or curtailing cropland area. For example, the purpose of the "New Lands" policy initiated in the Soviet Union during the early 1960's was to convert lands, which had previously been used for grazing, into approximately 7 million hectares of cropland, mainly in Kazakhstan Republic. In 1968 another such effort, though smaller in scale, added another 3 million hectares of cropland. A similar effort was made in Egypt between 1964 and 1966 when 230,000 hectares of desert land were reclaimed for cropland area. Many developing countries have introduced land reclamation projects in order to expand cropland area. If successful, these efforts, though smaller in scale and less spectacular, will be more enduring than the Soviet and Egyptian schemes which are being abandoned.

The pattern of agricultural land use is relatively complex in the United States, Canada, and Australia where a large percentage of domestic production is exported and is subject to fluctuations in foreign demand. U.S. public policy was often aimed more at curtailing cropland area than at expanding it, particularly during the three decades under review.

Conclusion

Data indicate an increasing disparity between world population growth and cropland expansion. Since the 1950's the rate of cropland expansion declined 70 percent, from an annual rate of 1.0 percent to less than 0.3 percent, whereas the rate of population growth declined only 15 percent, from 2.0 percent to 1.7 percent. As a result, per capita cropland availability dropped drastically, especially in Central America, China, Iran, Mexico, North Africa, and South Asia.

The rate of world population growth is expected to continue its gradual decline through the middle of the 21st century, when most countries are expected to reach a zero population growth rate (17). Thus, since the rate of cropland expansion is likely to continue to decline, as it has during the past 25 years, most of the future growth in world agricultural output will have to come from increases in land productivity.

Since the 1950's the growth rate of agricultural production declined nearly 20 percent, from an annual rate of 2.7 percent to 2.2 percent (13). This is only about 25 percent of the decline in the rate of land expansion. Hence, much of the progress in increasing world agricultural production has already been attributed to advances in scientific knowledge, improved management, and increased use of modern technical inputs such as high-yielding seed varieties, fertilizers, pesticides, and irrigation. The growth in utilized cropland in relation to increases in agricultural production was, no doubt, due to the fact that investing in production technology was more cost effective than expanding cropland.

Future increases in food production in most regions of the world must increasingly come from modern technology which substitutes for land by augmenting output per unit of land. Investment in agricultural research and development, the source of increases in agricultural productivity, is the basis for advancement in agricultural production technology and is in fact a prerequisite to improvement of living standards in both developed and developing countries. Hence, it is important that declines in research-and-development investment in agriculture, currently occurring in a number of developed countries, be reversed.

There are a few countries which have been endowed with abundant cropland relative to population, namely, Argentina, Australia, Botswana, Cameroon, Canada, Senegal, the Soviet Union, the United States, and Zambia. The abundance of agricultural cropland may not, however, be a sufficient indicator of agricultural potential. Countries outside the temperate zone are confronted with serious climatic or soil constraints which limit production. Neither the Soviet Union nor

Botswana, for example, enjoys particularly favorable climatic conditions. In the Soviet Union, frequent frosts, floods, and inadequate sunshine destroy crops, causing wide variations in the performance of agriculture. In Botswana, inadequate moisture constrains agriculture.

Africa has a relatively abundant amount of land,⁶ but most African countries import large quantities of food—South Africa being the obvious exception. Very low yields characterize agriculture on the continent, underscoring the critical importance of major research efforts to improve productivity of tropical agriculture in both crops and livestock.

Latin America may offer the most viable location for cropland expansion. Colombia, Peru, and Venezuela, however, face similar population pressures on cropland to those which exist in Western Europe, while Bolivia's apparent land abundance is severely constrained by a high elevation and potential soil degradation. This leaves Argentina, Brazil, Uruguay, and, to a lesser extent, Chile as countries with a significant cropland expansion potential and thus growth possibilities in agriculture.

These conclusions contain an important caveat. It is apparent that the data on which this analysis is based contain fundamental weaknesses, even for the developed countries. More reliable and sophisticated analyses of land use and availability could be undertaken if existing problems with the data, such as inadequate measurement, unreconciled data series, and imprecise definitions, were resolved.

⁶ There are some African countries that are cropland deficient. Among these are Burundi, Cape Verde, Djibouti, Kenya, Mauritania, Mauritius, Reunion, and Western Sahara.

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Appendix table 1—World cropland by regions

Year	N. America & Oceania	Central America	Caribbean Islands	South America	Western Europe	Eastern Europe	USSR	North Africa	Sub-Saharan Africa	Middle East	South Asia	Southeast Asia	East Asia	China	World
<i>Million hectares</i>															
1955	251.8	26.2	4.4	67.8	93.4	56.0	223.0	24.4	113.2	58.4	184.4	43.3	11.3	100.0	1,257.6
1960	255.8	28.1	4.5	87.2	94.2	56.2	221.4	25.0	124.3	64.0	191.9	52.6	11.9	102.5	1,319.7
1963 ¹	259.7	29.6	4.5	100.1	96.3	55.9	229.5	23.4	135.0	64.6	192.5	60.1	11.5	104.5	1,367.2
1966	259.5	34.0	4.4	105.3	93.2	55.5	229.3	20.5	139.9	59.1	203.1	63.8	11.9	103.6	1,381.4
1967	260.0	34.2	4.6	106.9	92.7	55.3	229.3	20.5	141.6	59.1	203.9	64.2	11.7	103.2	1,385.3
1968	266.7	34.4	4.9	109.6	91.9	55.3	229.9	20.6	142.7	59.3	204.8	64.9	11.7	102.9	1,397.1
1969	275.1	34.5	5.1	110.5	91.8	55.0	233.2	20.6	144.6	60.5	204.8	65.4	11.5	102.6	1,412.9
1970	274.8	34.7	5.4	111.4	91.1	54.9	232.8	20.8	154.6	60.3	205.5	65.9	11.5	102.2	1,414.2
1971	273.6	34.9	5.5	113.2	88.7	54.8	232.6	21.1	146.6	60.6	204.9	66.1	11.4	101.9	1,413.2
1972	272.8	35.4	5.8	115.1	88.5	54.6	232.4	21.3	147.6	61.6	205.7	67.5	11.3	101.6	1,418.1
1973	272.2	35.6	6.0	116.8	88.0	54.5	232.1	21.5	148.2	61.7	207.3	68.4	11.2	101.2	1,421.7
1974	273.9	35.6	5.9	118.6	88.1	54.4	232.7	21.6	149.9	61.8	208.3	69.7	11.2	100.9	1,429.6
1975	274.4	35.7	6.0	120.1	87.9	54.3	232.2	22.1	151.0	61.1	209.5	70.5	11.2	100.6	1,433.3
1976	274.6	35.9	6.0	122.0	87.5	54.3	232.2	22.5	152.9	61.3	209.6	70.6	11.3	100.3	1,437.8
1977	274.0	36.1	6.0	123.4	87.4	54.2	232.4	22.4	154.2	61.4	210.1	71.2	11.4	99.9	1,440.9
1978	278.0	36.2	6.1	123.9	87.6	54.0	231.8	22.4	154.8	61.7	210.5	71.7	11.5	99.6	1,446.6
1979	279.5	36.3	6.1	125.0	87.5	53.9	231.9	22.2	155.7	62.6	210.9	72.0	11.4	99.5	1,451.0
1980	279.8	36.4	6.1	125.7	87.2	53.7	232.0	22.0	156.3	62.2	211.2	72.2	11.4	99.2	1,452.2

¹ 1961-65 average.

Source: (7).

Appendix table 2—Cropland in selected countries

Year	United States	Canada	Australia	Mexico	Brazil	Argentina	Egypt	Nigeria	South Africa	Iran	Saudi Arabia	India	Japan	Republic of Korea
<i>Million hectares</i>														
1955	187.8	40.0	23.5	21.4	24.0	26.5	2.6	22.0	9.0	15.1	0.4	154.4	5.5	2.0
1960	185.0	40.6	29.7	22.8	40.0	27.2	2.5	26.2	10.3	15.2	.6	161.0	6.1	2.1
1963 ¹	183.5	42.2	33.5	23.6	50.3	28.1	2.5	29.1	12.6	15.4	.8	162.0	5.9	2.1
1966	177.6	41.6	39.8	23.4	51.9	30.2	2.8	29.2	13.1	15.5	.8	162.7	5.8	2.3
1967	176.3	41.7	41.4	23.3	52.4	31.1	2.8	29.4	13.1	15.6	.8	163.8	5.8	2.3
1968	182.8	41.8	41.6	23.3	53.0	33.0	2.8	29.4	13.1	15.6	.8	164.6	5.7	2.3
1969	191.0	41.8	41.7	23.2	53.5	33.1	2.8	29.8	13.2	15.7	.9	164.6	5.5	2.3
1970	190.1	41.9	41.8	23.1	54.0	33.2	2.8	29.9	13.2	15.7	.9	165.1	5.5	2.3
1971	189.9	42.0	41.3	23.1	54.9	33.9	2.9	29.9	13.2	15.7	.9	164.4	5.4	2.3
1972	189.3	42.3	40.8	23.2	55.9	34.0	2.9	29.9	13.3	15.8	1.0	165.3	5.3	2.2
1973	188.8	42.7	40.4	23.2	56.9	34.3	2.9	29.9	13.3	15.8	1.1	166.5	5.2	2.2
1974	188.2	43.0	42.3	23.2	57.8	34.4	2.8	29.9	13.4	15.9	1.1	167.2	5.2	2.2
1975	188.2	43.4	42.4	23.2	58.8	34.6	2.8	30.0	13.4	15.9	1.1	168.6	5.1	2.2
1976	188.2	43.7	42.2	23.2	59.8	35.0	2.8	30.1	13.4	16.0	1.1	168.2	5.0	2.2
1977	188.3	44.0	41.3	23.2	60.7	35.0	2.8	30.2	13.5	16.0	1.1	168.3	5.0	2.2
1978	190.6	44.3	42.7	23.2	60.7	35.1	2.8	30.2	13.5	16.0	1.1	168.6	4.9	2.2
1979	190.6	44.4	41.1	23.2	61.5	35.1	2.8	30.3	13.5	16.0	1.1	168.8	4.9	2.2
1980	190.6	44.4	44.4	23.3	62.0	35.2	2.9	30.4	13.6	16.0	1.1	169.1	4.9	2.2

¹ 1961-65 average.

Source: (7).

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80

Year	Afghanistan ¹	Albania ¹	Algeria	Angola ¹	Argentina ¹	Australia	Austria
<i>1,000 hectares</i>							
1955	5,100	415	6,880	2,300	26,500	23,500	1,765
1960	6,800	470	6,819	2,900	27,200	29,728	1,755
1963 ²	7,804	497	6,863	3,250	28,098	33,534	1,735
1964	7,873	501	6,753	3,300	28,550	35,380	1,724
1965	7,875	522	6,784	3,360	29,061	36,966	1,660
1966	7,913	540	6,784	3,360	30,248	39,797	1,686
1967	7,979	556	6,866	3,380	31,131	41,461	1,670
1968	7,980	570	6,787	3,410	33,007	41,574	1,672
1969	7,996	585	6,787	3,460	33,101	41,686	1,680
1970	8,006	599	6,800	3,460	33,201	41,800	1,681
1971	8,036	610	6,981	3,480	33,850	41,300	1,681
1972	8,046	624	7,171	3,480	33,950	40,800	1,682
1973	8,048	636	7,135	3,500	34,250	40,400	1,612
1974	8,048	652	7,275	3,500	34,400	42,300	1,612
1975	8,048	668	7,495	3,500	34,450	42,400	1,609
1976	8,048	685	7,746	3,500	35,000	42,246	1,618
1977	8,050	704	7,542	3,500	35,000	41,254	1,627
1978	8,050	720	7,542	3,500	35,100	42,683	1,645
1979	8,050	737	7,497	3,500	35,120	44,100	1,622
1980	8,050	750	7,509	3,500	35,200	44,400	1,635
	Bangladesh	Belgium-Luxembourg	Benin ¹	Bhutan ¹	Burundi	Bolivia ¹	Botswana ¹
<i>1,000 hectares</i>							
1955	8,500	1,075	1,470	65	860	950	950
1960	8,750	1,024	1,470	70	900	1,300	990
1963 ²	8,919	1,007	1,470	70	952	1,503	1,000
1964	8,920	1,011	1,470	70	974	1,550	1,015
1965	9,037	1,007	1,470	70	996	1,540	1,025
1966	9,050	981	1,475	70	993	1,730	1,040
1967	9,050	961	1,500	72	1,038	1,820	1,070
1968	9,069	954	1,530	73	1,050	1,960	1,100
1969	9,075	930	1,570	74	1,247	2,100	1,140
1970	9,097	916	1,600	76	1,200	2,240	1,170
1971	9,095	908	1,630	77	1,189	2,335	1,200
1972	9,112	904	1,670	79	1,166	2,627	1,240
1973	9,116	897	1,700	80	1,230	2,921	1,270
1974	9,133	896	1,735	82	1,250	3,217	1,300
1975	9,129	897	1,770	84	1,255	3,285	1,330
1976	9,124	890	1,780	86	1,260	3,290	1,360
1977	9,118	888	1,790	88	1,272	3,320	1,360
1978	9,130	891	1,790	89	1,280	3,330	1,360
1979	9,137	847	1,790	91	1,295	3,366	1,360
1980	9,145	878	1,795	93	1,305	3,370	1,360

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Brazil ¹	Bulgaria	Burma	Cameroon ¹	Canada ¹	Central African Republic ¹		
	1,000 hectares							
1955	24,000	4,500	8,600	5,320	40,000	1,680		
1960	40,000	4,624	9,000	5,480	40,600	1,735		
1963 ²	50,300	4,565	10,423	5,600	42,156	1,830		
1964	50,850	4,574	10,400	5,670	42,300	1,830		
1965	51,400	4,563	10,375	5,730	42,500	1,800		
1966	51,910	4,564	10,366	5,800	41,620	1,790		
1967	52,430	4,554	10,387	5,870	41,690	1,800		
1968	52,950	4,558	10,393	5,920	41,760	1,810		
1969	53,470	4,555	10,403	5,970	41,830	1,820		
1970	53,984	4,527	10,430	5,978	41,900	1,830		
1971	54,945	4,516	10,435	6,028	41,978	1,840		
1972	55,910	4,510	10,440	6,095	42,320	1,850		
1973	56,870	4,502	9,960	6,160	42,670	1,860		
1974	57,830	4,488	9,971	6,280	43,020	1,870		
1975	58,803	4,343	9,985	6,395	43,360	1,890		
1976	59,750	4,327	10,000	6,510	43,709	1,900		
1977	60,720	4,313	9,994	6,644	44,000	1,910		
1978	60,720	4,292	10,006	6,671	44,300	1,920		
1979	61,500	4,258	10,016	6,912	44,350	1,930		
1980	61,950	4,181	10,023	6,930	44,350	1,945		
	Chad ¹	Chile ¹	People's Republic of China ¹		Colombia ¹	Congo ¹	Costa Rica	Cuba
	1,000 hectares							
1955	2,810	4,000	100,000		4,550	610	392	2,000
1960	2,880	4,100	102,500		5,062	620	445	1,900
1963 ²	2,900	4,206	104,500		5,051	629	484	1,790
1964	2,900	4,298	104,200		5,050	627	485	1,760
1965	2,900	4,434	103,900		5,060	622	485	1,750
1966	2,900	4,598	103,600		5,050	622	485	1,744
1967	2,900	4,680	103,200		5,050	622	486	1,922
1968	2,900	4,750	102,900		5,040	622	486	2,171
1969	2,900	4,820	102,600		5,048	627	490	2,325
1970	2,900	4,890	102,200		4,054	627	493	2,612
1971	2,900	4,960	101,900		5,054	632	497	2,673
1972	2,900	5,030	101,600		5,110	642	497	3,005
1973	2,910	5,100	101,200		5,175	642	490	3,179
1974	2,920	5,180	100,900		5,245	642	490	3,031
1975	3,000	5,260	100,600		5,310	652	490	3,110
1976	3,100	5,340	100,300		5,400	662	490	3,120
1977	3,100	5,420	99,900		5,505	667	490	3,130
1978	3,150	5,500	99,600		5,600	667	490	3,170
1979	3,150	5,530	99,310		5,600	667	490	3,195
1980	3,150	5,530	99,200		5,650	669	490	3,200

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Cyprus	Czechoslovakia	Denmark	Dominican Republic ¹	Ecuador ¹	Egypt	El Salvador
<i>1,000 hectares</i>							
1955	434	5,420	2,735	812	1,600	2,555	595
1960	433	5,427	2,784	940	2,020	2,506	632
1963 ²	432	5,335	2,761	1,020	2,518	2,548	655
1964	432	5,031	2,740	1,035	2,525	2,506	665
1965	432	5,387	2,708	1,050	2,530	2,672	665
1966	432	5,373	2,701	1,065	2,530	2,780	645
1967	432	5,362	2,700	1,080	2,540	2,801	631
1968	432	5,353	2,709	1,090	2,535	2,801	629
1969	432	5,342	2,693	1,130	2,545	2,835	627
1970	432	5,334	2,676	1,135	2,555	2,843	623
1971	432	5,329	2,662	1,144	2,565	2,852	651
1972	432	5,323	2,666	1,150	2,575	2,855	651
1973	432	5,311	2,668	1,175	2,585	2,855	651
1974	432	5,290	2,655	1,175	2,609	2,843	651
1975	432	5,256	2,660	1,175	2,610	2,825	651
1976	432	5,258	2,667	1,230	2,615	2,814	669
1977	432	5,259	2,648	1,230	2,615	2,831	699
1978	432	5,246	2,653	1,230	2,615	2,845	680
1979	432	5,214	2,656	1,230	2,615	2,848	725
1980	432	5,169	2,653	1,230	2,620	2,855	725
	Ethiopia	Fiji ¹	Finland	France	Gabon ¹	Gambia ¹	German Democratic Republic
<i>1,000 hectares</i>							
1955	11,485	148	2,572	21,350	148	221	5,080
1960	11,600	180	2,668	21,511	160	205	5,070
1963 ²	12,044	213	2,524	21,067	175	197	5,046
1964	12,130	224	2,530	20,828	195	200	5,026
1965	12,525	189	2,540	20,542	205	200	5,006
1966	12,670	204	2,552	20,214	220	210	4,904
1967	12,800	192	2,544	19,816	235	215	4,878
1968	12,970	225	2,533	19,303	250	220	4,860
1969	13,250	225	2,516	19,265	265	225	4,840
1970	13,250	225	2,517	19,101	280	230	4,817
1971	13,500	225	2,518	18,690	300	235	4,824
1972	13,730	228	2,515	18,632	315	240	4,843
1973	13,730	228	2,512	18,701	335	245	4,858
1974	13,730	230	2,496	18,887	350	250	4,890
1975	13,730	230	2,481	18,954	369	260	4,937
1976	13,730	231	2,465	18,737	404	260	4,998
1977	13,760	233	2,435	18,836	427	265	5,029
1978	13,790	234	2,430	18,975	449	265	5,039
1979	13,827	234	2,423	18,922	450	265	5,041
1980	13,880	236	2,399	18,643	452	270	5,034

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Germany, Federal Republic of	Ghana ¹	Greece	Guatemala ¹	Guinea ¹	Guinea Bissau ¹		
	1,000 hectares							
	1955	8,705	2,540	3,580	1,462	1,500	252	
	1960	8,549	2,580	3,701	1,450	1,550	260	
	1963 ²	7,836	2,541	3,800	1,442	1,570	263	
	1964	7,835	2,609	3,848	1,484	1,570	263	
	1965	7,680	2,544	3,854	1,499	1,570	263	
	1966	7,677	2,727	3,851	1,505	1,570	262	
	1967	7,647	2,780	3,874	1,530	1,570	275	
	1968	7,645	2,835	3,904	1,532	1,570	275	
	1969	7,639	2,650	3,964	1,542	1,570	275	
	1970	7,574	2,574	3,910	1,542	1,570	275	
	1971	7,580	2,600	3,910	1,545	1,570	275	
	1972	7,601	2,600	3,910	1,645	1,570	275	
	1973	7,591	2,700	3,893	1,680	1,570	280	
	1974	7,589	2,700	3,891	1,700	1,570	285	
	1975	7,573	2,700	3,867	1,705	1,570	285	
	1976	7,565	2,700	3,862	1,735	1,570	285	
	1977	7,531	2,705	3,857	1,800	1,570	285	
	1978	7,537	2,720	3,920	1,800	1,570	285	
	1979	7,517	2,750	3,926	1,810	1,570	285	
	1980	7,494	2,760	3,926	1,834	1,570	285	
	Guinea, Equatorial ¹		Guyana ¹	Haiti ¹	Honduras ¹	Hungary	India	Indonesia ¹
	1,000 hectares							
	1955	208	150	700	855	5,710	154,420	14,000
	1960	213	285	700	997	5,703	161,000	15,700
	1963 ²	217	360	702	1,499	5,632	161,998	16,740
	1964	221	362	720	1,505	5,638	162,118	16,900
	1965	221	364	730	1,510	5,649	162,434	17,000
	1966	225	365	745	1,515	5,642	162,720	17,600
	1967	225	365	765	1,525	5,626	163,790	17,620
	1968	225	367	780	1,530	5,613	164,570	17,940
	1969	225	367	800	1,530	5,604	164,570	17,960
1970	225	372	810	1,540	5,594	165,060	18,080	
1971	230	372	820	1,545	5,578	164,440	18,100	
1972	230	375	834	1,580	5,565	165,260	18,530	
1973	230	377	840	1,590	5,555	166,530	18,960	
1974	230	377	850	1,596	5,503	167,230	19,390	
1975	230	379	860	1,635	5,595	168,010	19,470	
1976	230	379	870	1,670	5,471	168,189	19,418	
1977	230	379	870	1,745	5,422	168,260	19,418	
1978	230	379	885	1,757	5,388	168,635	19,418	
1979	230	379	885	1,757	5,354	169,833	19,418	
1980	230	379	890	1,757	5,333	169,130	19,500	

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Iran ¹	Iraq ¹	Ireland	Israel	Italy	Ivory Coast ¹	Jamaica ¹
	1,000 hectares						
1955	15,050	5,350	1,282	400	13,090	2,150	185
1960	15,220	5,000	1,376	412	12,904	2,605	231
1963 ²	15,358	4,810	1,318	401	12,590	2,650	233
1964	15,400	4,865	1,297	411	12,512	2,665	231
1965	15,440	4,920	1,263	400	12,523	2,680	241
1966	15,480	4,925	1,199	411	12,396	2,700	245
1967	15,550	4,980	1,194	411	12,351	2,720	245
1968	15,600	4,985	1,164	417	12,333	2,730	245
1969	15,670	4,990	1,151	417	12,139	2,750	245
1970	15,700	4,993	1,147	409	11,984	2,770	250
1971	15,753	4,999	1,132	411	12,409	2,780	250
1972	15,773	5,160	1,102	411	12,305	2,800	250
1973	15,820	5,170	1,052	421	12,233	2,900	250
1974	15,860	5,280	1,022	427	12,288	3,300	260
1975	15,890	5,290	1,003	422	12,313	3,500	260
1976	15,950	5,290	992	412	12,353	3,650	265
1977	15,950	5,290	987	413	12,206	3,750	265
1978	15,950	5,395	982	413	12,401	3,800	265
1979	15,950	5,450	977	413	12,446	3,850	265
1980	15,950	5,450	972	413	12,465	3,880	265
	Japan	Jordan ¹	Kampuchea ¹	Kenya ¹	Korea, People's Democratic Republic of ¹		
	1,000 hectares						
1955	5,510	895	3,000	1,630	2,400		
1960	6,072	1,005	2,420	1,685	2,200		
1963 ²	5,893	1,177	2,691	1,723	1,905		
1964	5,900	1,202	2,778	1,780	1,894		
1965	5,864	1,252	2,938	1,830	1,950		
1966	5,839	1,300	2,983	1,885	1,950		
1967	5,753	1,300	2,984	1,940	1,950		
1968	5,684	1,300	3,050	1,970	2,000		
1969	5,503	1,300	3,133	2,020	2,000		
1970	5,510	1,300	3,046	2,080	2,000		
1971	5,389	1,315	3,046	2,110	2,050		
1972	5,295	1,320	3,046	2,140	2,050		
1973	5,216	1,326	3,046	2,170	2,100		
1974	5,158	1,360	3,046	2,210	2,100		
1975	5,088	1,360	3,046	2,240	2,150		
1976	5,030	1,365	3,046	2,270	2,170		
1977	4,985	1,365	3,046	2,270	2,210		
1978	4,940	1,370	3,046	2,270	2,220		
1979	4,907	1,370	3,046	2,270	2,230		
1980	4,881	1,380	3,046	2,275	2,240		

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Korea, Republic of	Laos ¹	Lebanon ¹	Lesotho	Liberia ¹	Libya ¹	Madagascar ¹
	1,000 hectares						
1955	1,950	1,020	270	355	370	2,000	1,310
1960	2,080	1,000	280	355	370	2,000	1,395
1963 ²	2,133	900	276	355	375	2,000	2,195
1964	2,171	800	280	355	373	2,000	2,215
1965	2,256	800	296	355	373	2,000	2,240
1966	2,293	850	296	360	370	2,000	2,270
1967	2,312	840	306	360	370	2,005	2,295
1968	2,319	842	316	365	368	2,015	2,320
1969	2,311	842	320	365	368	2,020	2,350
1970	2,298	842	325	368	366	2,025	2,370
1971	2,271	842	330	360	366	2,035	2,390
1972	2,242	842	335	355	366	2,038	2,420
1973	2,241	842	345	355	366	2,045	2,440
1974	2,231	848	348	355	366	2,048	2,475
1975	2,240	848	348	372	366	2,055	2,759
1976	2,238	849	348	355	366	2,058	2,764
1977	2,231	853	348	288	371	2,065	2,929
1978	2,222	865	348	289	371	2,073	2,929
1979	2,207	865	348	305	371	2,075	3,000
1980	2,196	880	348	292	371	2,080	3,000
	Malawi ¹	Malaysia ¹	Mali ¹	Mauritania ¹	Mauritius	Mexico ¹	Mongolia
	1,000 hectares						
1955	1,950	2,200	1,600	245	82	21,400	630
1960	1,960	2,800	1,650	255	91	22,800	710
1963 ²	1,971	3,600	1,650	261	93	23,613	683
1964	1,980	3,650	1,650	261	93	23,540	750
1965	1,985	3,700	1,650	262	94	23,470	867
1966	1,996	3,750	1,700	263	92	23,400	885
1967	2,003	3,800	1,700	273	98	23,340	819
1968	2,009	3,850	1,700	273	104	23,270	777
1969	2,058	3,900	1,700	283	104	23,210	746
1970	2,108	3,950	1,750	283	105	23,138	744
1971	2,158	4,000	1,750	283	105	23,160	775
1972	2,218	4,050	1,750	243	106	23,170	776
1973	2,264	4,100	1,750	183	106	23,180	789
1974	2,264	4,150	1,800	170	106	23,190	801
1975	2,278	4,198	1,850	196	106	23,200	827
1976	2,278	4,250	2,050	198	107	23,210	950
1977	2,278	4,280	2,050	199	107	23,220	1,100
1978	2,298	4,280	2,050	195	107	23,220	1,154
1979	2,298	4,300	2,050	195	107	23,220	1,160
1980	2,320	4,310	2,050	195	107	23,330	1,182

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Morocco ¹	Mozambique ¹	Namibia ¹	Nepal	Netherlands	New Zealand	Nicaragua ¹
<i>1,000 hectares</i>							
1955	8,000	2,400	640	1,800	1,050	480	900
1960	8,564	2,550	640	1,800	1,033	643	1,220
1963 ²	7,066	2,669	644	1,833	992	500	1,335
1964	7,110	2,678	646	1,831	977	491	1,440
1965	7,220	2,688	646	1,831	968	550	1,440
1966	7,338	2,694	646	1,831	946	548	1,400
1967	7,338	2,720	649	1,845	922	498	1,430
1968	7,438	2,820	649	1,845	913	548	1,430
1969	7,429	2,924	649	1,845	891	543	1,435
1970	7,505	3,009	651	1,980	867	579	1,435
1971	7,504	3,009	653	1,980	848	442	1,435
1972	7,570	3,028	653	2,082	841	406	1,440
1973	7,625	3,080	653	2,193	834	387	1,450
1974	7,630	3,080	653	2,326	839	398	1,504
1975	7,717	3,080	653	2,326	841	406	1,505
1976	7,650	3,080	655	2,326	843	430	1,505
1977	7,779	3,080	655	2,326	864	446	1,505
1978	7,868	3,080	656	2,330	857	433	1,511
1979	7,719	3,080	656	2,330	862	453	1,511
1980	7,719	3,080	657	2,330	861	453	1,516
	Niger	Nigeria ¹	Norway	Pakistan	Panama ¹	Papua New Guinea ¹	
<i>1,000 hectares</i>							
1955	1,960	22,000	832	18,150	560		285
1960	2,090	26,200	850	18,700	560		300
1963 ²	2,178	29,100	850	17,874	562		309
1964	2,200	29,100	849	18,746	555		310
1965	2,225	29,100	846	19,263	555		315
1966	2,250	29,150	841	19,692	556		315
1967	2,300	29,350	845	19,261	549		321
1968	2,327	29,350	843	19,235	549		340
1969	2,670	29,750	827	19,235	547		346
1970	2,700	29,900	814	19,332	543		346
1971	2,730	29,900	806	19,279	543		348
1972	2,677	29,900	795	19,101	549		349
1973	2,314	29,900	790	19,381	549		349
1974	2,602	29,900	793	19,555	556		349
1975	2,154	30,000	792	19,830	561		351
1976	2,734	30,100	795	19,760	561		353
1977	3,150	30,250	800	20,110	566		356
1978	3,112	30,250	806	20,110	566		359
1979	3,290	30,310	832	20,300	570		364
1980	3,350	30,385	812	20,320	574		366

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Paraguay ¹	Peru	Philippines ¹	Poland	Portugal ¹	Puerto Rico	Romania
<i>1,000 hectares</i>							
1955	560	1,730	6,200	16,500	3,880	360	10,280
1960	742	1,820	6,780	16,233	4,130	313	10,346
1963 ²	852	2,351	6,807	15,968	4,332	287	10,466
1964	879	2,618	8,060	15,942	4,270	295	10,496
1965	903	2,700	8,286	15,682	4,170	271	10,475
1966	928	2,625	9,350	15,682	4,070	267	10,502
1967	931	2,634	9,400	15,518	3,970	250	10,526
1968	935	2,680	9,450	15,494	3,875	244	10,560
1969	940	2,719	9,500	15,333	3,815	236	10,544
1970	945	2,813	9,560	15,326	3,775	207	10,512
1971	950	2,822	9,610	15,277	3,720	193	10,506
1972	955	3,143	9,650	15,147	3,690	178	10,488
1973	958	3,190	9,700	15,107	3,660	160	10,426
1974	1,100	3,185	9,740	15,078	3,640	160	10,469
1975	1,230	3,195	9,790	15,084	3,620	159	10,500
1976	1,370	3,285	9,840	15,038	3,600	159	10,518
1977	1,510	3,388	9,900	15,018	3,575	161	10,534
1978	1,640	3,385	9,900	14,988	3,565	163	10,542
1979	1,781	3,399	9,900	14,931	3,555	162	10,481
1980	1,920	3,400	9,920	14,901	3,550	139	10,497
Rwanda	Saudi Arabia ¹	Senegal ¹	Sierra Leone ¹	Somalia ¹	Samoa ¹	South Africa ¹	
<i>1,000 hectares</i>							
1955	580	380	4,030	1,280	850	90	9,000
1960	630	640	4,280	1,360	957	102	10,279
1963 ²	645	800	4,400	1,400	969	105	12,610
1964	655	800	4,450	1,415	974	107	12,850
1965	665	800	4,500	1,430	979	110	13,000
1966	665	809	4,550	1,450	989	110	13,068
1967	675	809	4,600	1,460	1,014	111	14,104
1968	683	825	4,650	1,470	1,014	113	14,140
1969	697	840	4,700	1,480	1,024	113	13,176
1970	704	860	4,750	1,490	1,022	114	13,212
1971	748	878	4,800	1,500	1,022	115	13,248
1972	808	925	4,850	1,520	1,042	116	13,284
1973	805	1,030	4,900	1,540	1,044	116	13,320
1974	884	1,115	4,950	1,570	1,055	118	13,356
1975	912	1,099	5,000	1,600	1,055	118	13,392
1976	939	1,110	5,050	1,640	1,055	119	13,430
1977	955	1,104	5,100	1,680	1,066	119	13,464
1978	960	1,105	5,150	1,720	1,066	120	13,510
1979	967	1,105	5,200	1,760	1,066	121	13,536
1980	975	1,105	5,225	1,766	1,066	122	13,572

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	Spain	Sri Lanka	Sudan ¹	Swaziland	Sweden	Switzerland	Syria			
	1,000 hectares									
	1955	20,000	1,518	7,600	104	3,770	445	4,400		
	1960	20,523	1,538	9,700	142	3,598	438	6,014		
	1963 ²	20,709	1,737	11,000	134	3,397	415	6,523		
	1964	20,553	1,873	11,100	135	3,304	404	6,654		
	1965	20,594	1,876	11,200	142	3,210	404	6,599		
	1966	20,156	1,875	11,300	149	3,158	401	6,130		
	1967	20,482	1,875	11,400	153	3,100	397	6,130		
	1968	20,359	1,980	11,500	153	3,031	392	5,861		
	1969	20,827	1,980	11,600	149	3,055	387	5,885		
	1970	20,519	1,979	11,700	149	3,053	385	5,909		
	1971	21,184	1,979	11,800	149	3,051	385	5,908		
	1972	21,168	1,979	11,900	168	3,031	385	6,001		
	1973	20,979	1,979	12,000	168	3,018	384	5,878		
	1974	20,885	1,979	12,060	155	3,019	387	6,027		
	1975	20,833	2,109	12,160	167	3,006	395	5,476		
	1976	20,659	2,109	12,260	161	3,000	396	5,672		
	1977	20,604	2,131	12,360	149	2,994	396	5,509		
	1978	20,578	2,145	12,400	190	3,003	396	5,588		
	1979	20,528	2,141	12,400	190	2,985	396	5,686		
	1980	20,510	2,147	12,417	200	2,979	396	5,684		
		Taiwan	Tanzania ¹	Thailand ¹	Togo ¹	Trinidad and Tobago ¹	Tunisia	Turkey	Uganda	
		1,000 hectares								
		1955	857	3,100	5,350	940	173	4,485	23,400	2,900
		1960	869	3,260	10,077	1,015	174	4,650	25,360	2,972
		1963 ²	875	3,349	12,639	1,091	139	4,406	25,775	4,427
		1964	882	3,600	12,700	1,140	139	4,334	26,092	4,873
		1965	890	3,900	12,700	1,200	139	4,334	26,146	4,871
		1966	896	4,247	12,865	1,248	139	4,334	26,384	4,885
		1967	902	4,635	13,080	1,354	139	4,334	26,250	4,888
		1968	900	4,677	13,300	1,354	135	4,334	26,601	4,925
		1969	915	4,743	13,500	1,360	135	4,410	27,743	4,950
1970		905	4,820	13,808	1,406	135	4,480	27,378	4,980	
1971		903	4,860	13,939	1,408	140	4,560	27,614	5,030	
1972		899	4,900	14,750	1,400	140	4,630	28,226	5,100	
1973		896	4,940	15,580	1,383	156	4,710	28,287	5,180	
1974		917	4,990	16,363	1,415	157	4,780	27,928	5,264	
1975		917	5,030	16,680	1,415	157	4,860	27,662	5,407	
1976		920	5,070	16,988	1,415	157	4,940	27,703	5,573	
1977		923	5,100	17,385	1,415	157	5,027	27,929	5,538	
1978		925	5,140	17,826	1,420	158	4,923	28,045	5,610	
1979		926	5,140	17,950	1,420	158	4,931	28,792	5,610	
1980	926	5,160	17,970	1,420	158	4,700	28,479	5,680		

See footnotes at end of table.

Continued

Appendix table 3—Arable land and land under permanent crops, by country, 1955-80—Continued

Year	United Kingdom	United States	Upper Volta¹	Uruguay¹	USSR	Venezuela¹	
	1,000 hectares						
1955	7,270	187,798	2,150	1,720	223,000	2,200	
1960	7,336	184,957	2,160	1,760	221,366	3,200	
1963²	7,380	183,545	2,170	1,779	229,496	3,480	
1964	7,439	183,075	2,180	1,793	229,400	3,485	
1965	7,496	184,686	2,190	1,813	229,350	3,490	
1966	7,480	186,298	2,190	1,812	229,300	2,494	
1967	7,416	187,909	2,200	1,812	229,250	3,496	
1968	7,382	189,521	2,210	1,832	229,900	3,498	
1969	7,261	191,132	2,222	1,832	233,205	3,500	
1970	7,199	190,574	2,236	1,851	232,809	3,503	
1971	7,226	190,016	2,220	1,851	232,609	3,506	
1972	7,220	189,459	2,302	1,853	232,431	3,505	
1973	7,164	188,901	2,373	1,853	232,101	3,517	
1974	7,154	188,343	2,453	1,862	232,704	3,567	
1975	6,954	189,135	2,536	1,870	232,207	3,590	
1976	6,975	189,484	2,538	1,905	232,306	3,590	
1977	6,986	190,054	2,538	1,910	232,404	3,620	
1978	7,014	190,624	2,563	1,910	231,761	3,672	
1979	6,909	191,379	2,563	1,910	231,871	3,705	
1980	6,996	190,624	2,563	1,910	231,966	3,755	
	Vietnam¹	North Yemen¹	South Yemen¹	Yugoslavia	Zaire¹	Zambia¹	Zimbabwe¹
	1,000 hectares						
1955	4,420	2,650	115	8,100	5,200	4,710	1,765
1960	4,197	2,680	130	8,353	5,470	4,780	1,930
1963²	5,630	2,690	195	8,349	5,550	4,820	1,996
1964	5,630	2,695	150	8,343	5,600	4,840	2,050
1965	5,630	2,700	150	8,306	5,650	4,860	2,100
1966	5,630	2,705	150	8,266	5,700	4,880	2,175
1967	5,650	2,710	155	8,267	5,750	4,900	2,227
1968	5,670	2,715	160	8,246	5,800	4,920	2,279
1969	5,670	2,725	165	8,237	5,850	4,940	2,330
1970	5,700	2,730	170	8,205	5,896	4,950	2,382
1971	5,700	2,740	175	8,173	5,950	4,980	2,434
1972	5,720	2,755	180	8,130	6,000	4,980	2,468
1973	5,750	2,765	185	8,091	6,050	4,980	2,468
1974	5,770	2,775	190	8,066	6,100	4,985	2,521
1975	5,770	2,790	195	8,034	6,100	5,000	2,524
1976	5,808	2,790	200	8,005	6,150	5,008	2,526
1977	5,900	2,790	205	7,848	6,180	5,008	2,529
1978	5,999	2,790	205	7,927	6,200	5,058	2,536
1979	5,050	2,790	205	7,896	6,257	5,058	2,738
1980	6,055	2,790	207	7,884	6,314	5,108	2,539

¹ Indicates that most or all numbers represent FAO estimates.² 1961-65 average.

Sources: (6), (7), and ERS unpublished series for Italy, Taiwan, and United States.

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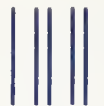
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